



**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST-NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/396,381 09/15/99 YAMAZAKI

S 0756-2027

IM62/0314  
SIXBEY FRIEDMAN LEEDOM & FERGUSON P C  
8180 GREENSBORO DRIVE  
SUITE 800  
MCLEAN VA 22102

EXAMINER

ANGERRANDT, M

ART UNIT

PAPER NUMBER

1756

DATE MAILED:

03/14/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

**BEST AVAILABLE COPY**

# Office Action Summary

Application No.  
09/396,381

Applicant(s)  
Yamazaki et al.

Examiner  
Martin J. Angebrannt

Group Art Unit  
1756



☒ Responsive to communication(s) filed on 9/15/99&11/29/99

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-6, 8-20, 22-34, 36-48, and 50-166 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-6, 8-20, 22-34, 36-48, and 50-166 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☒ received in Application No. (Series Code/Serial Number) 08/276,327.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 1756

1        Claims 61-67,72-78,83-89,94-100,105-111,116-122,127-133,138-144,149-155 and 160-166 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claims. See MPEP § 608.01(n). Accordingly, these claims not been further treated on the merits.

Section 608.01(n) referring to 37 CFR 1.75(c) states that claims will refer back to other claims upon which they are dependent in the alternative only. (ie no claim may be directly dependent upon more than one claim.)

2        Claims 134,135,136,137,145,146,147,148,156,157,158,159 are objected to under 37 CFR 1.75(b) as being a substantial duplicate of claims 1,8,15,22,29,36,43,50,57,58,59 and 60. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k) and 2173.05(n).

3        Claims 1-6,8-20,22-34,36-48 and 50-166 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for films having the recited pinhole densities, produced by ultrasonically vibrating the substrate during plasma deposition, does not reasonably provide enablement for any other methods for achieving the reduced pinhole density. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

Please insert language describing the ultrasonic vibration during coating formation.

Art Unit: 1756

4       The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6       Claims 1-6,15-20,29-34,43-48,57,59,101,103,112,114,123,125,134,136,145,147,156 and 158 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-058744.

JP 02-058744 teaches an optical recording memory disc which is formed by stamping or embossing the data into the substrate, coating a 30 nm carbon film, coating a reflective Al layer, overcoating this with a 50 nm carbon film and a resinous protective layer.

It would have been obvious to one skilled in the art to use this optical recording medium with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range, based upon its disclosed functionality. The examiner holds that the films of JP 02-058744 meet the recited limitation of the claims.

7       Claims 1-6,15-20,29-34,43-48,57,59,101,103,112,114,123,125,134,136,145,147,156 and 158 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-058744, as applied to claim above, and further in view of Marchant "Optical recording: A technical overview", pp. 132-139 (©1990).

Marchant "Optical recording: A technical overview", pp. 132-139 (©1990) teaches that various laser have been used for optical recording, including the Ar ion and the He-Cd laser which have outputs in the blue region of the visible spectrum. The use of semiconductor diode

Art Unit: 1756

lasers is disclosed as desirable due to their low power requirements, size, ease of modulation and cost. These are disclosed as having outputs of 780 nm and longer.

It would have been obvious to one skilled in the art to use the optical recording medium of JP 02-058744 with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range disclosed by Marchant "Optical recording: A technical overview", pp. 132-139 (©1990), based upon its disclosed functionality.

The rejection is presented in addition to that above to refute any arguments that the use of semiconductor laser diodes in the 700-800 nm range would not have been obvious to one skilled in the art at the time the invention was made.

8 Claims 1-6, 15-20, 29-34, 43-48, 57, 59, 101, 103, 112, 114, 123, 125, 134, 136, 145, 147, 156 and 158 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-058744, in view of Ikoma et al. '829 combined with Shinohara et al. 63-275037 or Murai et al. '132.

Ikoma et al. '829 teaches an optical recording card which includes a ultrahard carbon film having a thickness of 0.01 to 2 microns (10-200 nm) (col 3/lines 44-48, hereinafter 3/44-48). The Raman spectrum of this film has been measured to determine its structure (3/1-34). The use of a semiconductor laser having an output of 780 nm is disclosed in the examples.

Shinohara et al. 63-275037 teaches forming dense hard carbon films with decreased pinholes, thereby allowing films with reduced thicknesses to be formed.

Art Unit: 1756

Murai et al. '132 teaches the use of an irregular discharge to form denser carbon protective films for use in magnetic recording media. The coating is harder and therefore more wear resistant. (2/24-55)

It would have been obvious to one skilled in the art to use the optical recording medium of JP 02-058744 with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range disclosed by Ikoma et al. '829, based upon its disclosed functionality as well as to use other carbon films known within the recording medium art to have excellent hardness, are denser, and reduced defects, such as those of Shinohara et al. 63-275037 or Murai et al. '132 to allow thinner films to be used and thereby increase the rate of manufacture of the recording media.

9 Claims 1-6,8-20,22-34,36-48,57-60,101-104,112-115,123-126,134-137,145-148 and 156-159 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-058744, in view of Ikoma et al. '829, Shinohara JP 01-184722 and Shinohara JP 01-184722 combined with (Shinohara et al. 63-275037 or Murai et al. '132).

Shinohara JP 01-184722 teaches the incorporation of boron (as  $B_2H_6$ ) silicon and/or Ti in amounts of 3-15% of the final film composition for magnetic recording media with high hardness. (page 2/lower right column). This increases C/N for short wavelengths. (abstract)

Shinohara JP 01-184722 teaches the addition of silicon and nitrogen to carbon films for magnetic recording media. (table 1) These films are dense and provide increased durability.

It would have been obvious to one skilled in the art to use the optical recording medium of

Art Unit: 1756

JP 02-058744 with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range disclosed by Ikoma et al. '829, based upon its disclosed functionality as well as to use other carbon films known within the recording medium art to have excellent hardness, are denser, and reduced defects, such as those of Shinohara JP 01-184722, Shinohara JP 01-184722, Shinohara et al. 63-275037 or Murai et al. '132 to allow thinner films to be used and thereby increase the rate of manufacture of the recording media.

10 Claims 1-6,15-20,29-34,43-48,57,59,68,70,79,81,90,92,134,136,145,147,156 and 158 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brezoczky et al. '229, in view of Ikoma et al. '829 combined with Shinohara et al. 63-275037 or Murai et al. '132.

Brezoczky et al. '229 teaches the use of 30 nm thick carbon films with magneto-optical recording media. (7/21-45). These are disclosed as being used with semiconductor lasers. (7/25)

It would have been obvious to one skilled in the art to use the magneto-optical recording medium of Brezoczky et al. '229 with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range disclosed by Ikoma et al. '829, based upon its disclosed functionality as well as to use other carbon films known within the recording medium art to have excellent hardness, are denser, and reduced defects, such as those of Shinohara et al. 63-275037 or Murai et al. '132 to allow thinner films to be used and thereby increase the rate of manufacture of the recording media.

Art Unit: 1756

11 Claims 1-6,8-20,22-34,36-48,57-60,68-71,79-82,90-93,134-137,145-148 and 156-159 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brezoczky et al. '229, in view of Ikoma et al. '829, Shinohara JP 01-184722 and Shinohara JP 01-184722 combined with (Shinohara et al. 63-275037 or Murai et al. '132).

It would have been obvious to one skilled in the art to use the optical recording medium of Brezoczky et al. '229 with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range disclosed by Ikoma et al. '829, based upon its disclosed functionality as well as to use other carbon films known within the recording medium art to have excellent hardness, are denser, and reduced defects, such as those of Shinohara JP 01-184722, Shinohara JP 01-184722, Shinohara et al. 63-275037 or Murai et al. '132 to allow thinner films to be used and thereby increase the rate of manufacture of the recording media.

12 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

JP 01-270596 teaches the use of ultrasonic vibration when forming carbon deposits.

Stafford et al. '263 teaches the formation of fluorinated carbon films which are deposited rapidly at low temperatures.

David et al. '948 teaches the formation of diamond like coatings on magnetic head structures.

Yamazaki et al. '302 is a related application.



Serial Number: 09/396381

Page 8

Art Unit: 1756

13 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Angebranndt whose telephone number is (703) 308-4397.

I am normally available between 7:30 AM and 5:00 PM, Monday through Thursday and 7:30 AM and 4:00 PM on alternate Fridays.

If repeated attempts to reach me are unsuccessful, my supervisor may be reached at (703) 308-4552.

Facsimile correspondence should be directed to (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



Martin J. Angebranndt  
Primary Examiner, Group 1750  
March 13, 2000